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INTELLIGENCE COMMUNITY  
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OFFICE OF THE DIRECTOR OF NATIONAL INTELLIGENCE

# **Interface Beyond the Enterprise: Systems Engineering in an era of Global Technical Means**

L E A D I N G I N T E L L I G E N C E I N T E G R A T I O N

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Briefing to SERC  
November 2012

Report Documentation Page				Form Approved OMB No. 0704-0188	
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1. REPORT DATE <b>NOV 2012</b>		2. REPORT TYPE		3. DATES COVERED <b>00-00-2012 to 00-00-2012</b>	
4. TITLE AND SUBTITLE <b>Interface Beyond the Enterprise: Systems Engineering in an era of Global Technical Means</b>				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>Office of the Director of National Intelligence, Systems Engineering Research Center, Intelligence Community Science &amp; Technology (ICS&amp;T), Washington, DC, 20511</b>				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>					
13. SUPPLEMENTARY NOTES <b>SERC Sponsor Research Review, 13 Nov 2012, Washington, DC.</b>					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>Same as Report (SAR)</b>	18. NUMBER OF PAGES <b>13</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			



# Overview

- Our 'traditional' engineering environment
- Interface drivers
- 'Closed' systems
- The new Global Technical Means
- Implications for 'knowledge' systems



## A note on speaker perspective

- Not a systems engineer
  - ...but have been responsible for guiding engineers
  - ...and have worked in a commercial IT engineering company
- Social scientist by formal training
  - See technology success and adoption as highly dependant on the human context within which it is employed
  - See 'norms' within S&T communities as potential source of inertia thwarting change
- My 'system' is *the world*



## Observations on the traditional Intelligence Community (IC) engineering environment vs. commercial environments

	Commercial	IC
Customers	Known + unknown – enterprise goal is grow	Known – goal is satisfy
Requirements	Known + generated – seek new demand	Known – {ceiling on resources}
Customer to developer interaction	Varies – detached to direct – developers can drive expectations	Often extremely close – immediate feedback on fail – often highly informed ‘users’
Design cycle	Months / Year	Years / Decades
Adversary?	Competitors, hackers, fraud, yes...	Yes



## Resulting IC interfaces are...

- Usually –
  - Planned, documented, tested, refined, validated, revised on a schedule, etc.
- Sometimes –
  - Ad-hoc, temporary, expedient
    - But still between 'known' systems



## Historic interface drivers

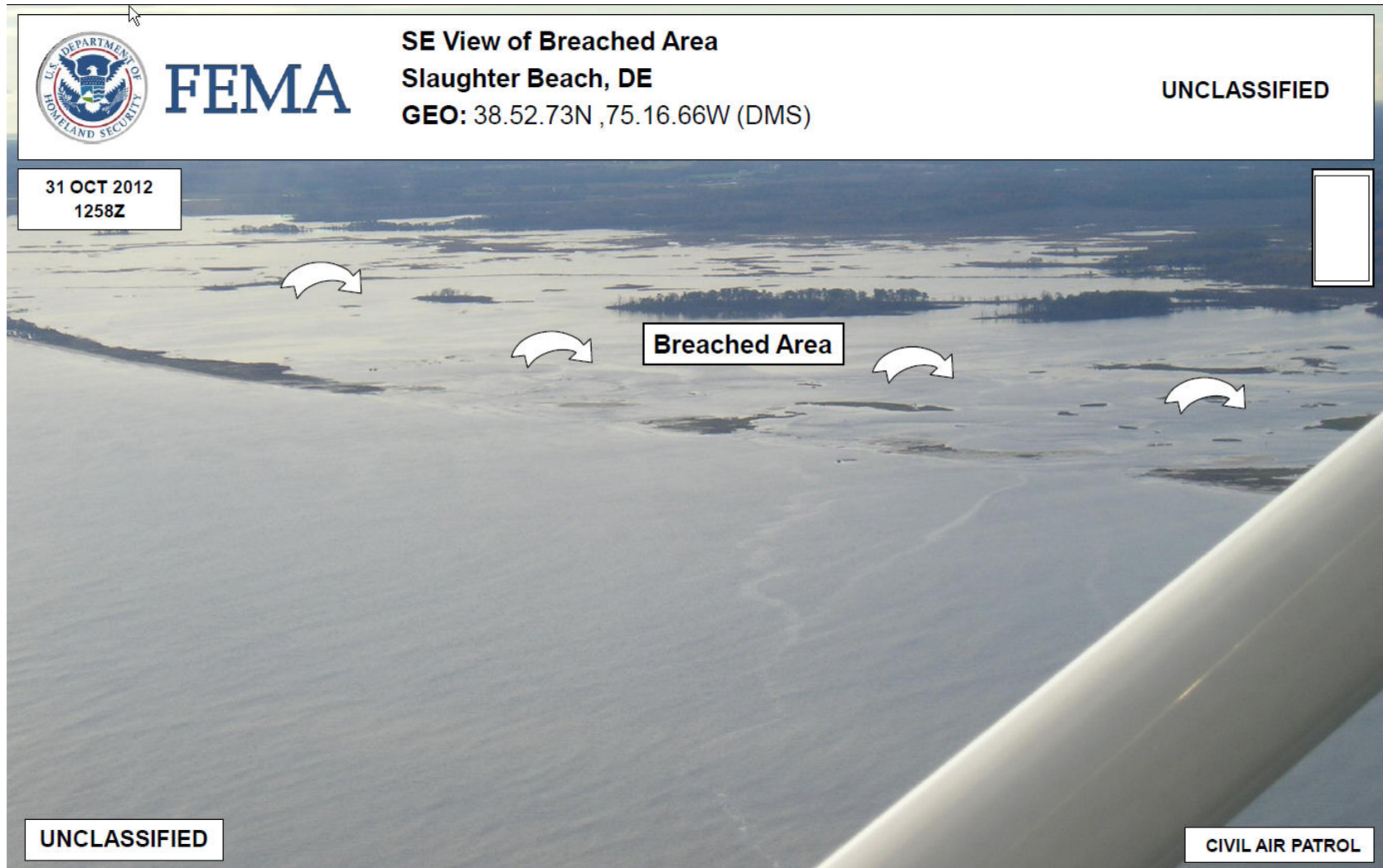
- Laws (constitution, legislation, FAR, FCC, etc.)
- Specifications/standards (military, IC, contractual)
- Developers (known)
- Users (known)
- Environment (anticipated)
- Applications (intended)

**Essentially, a closed system...**





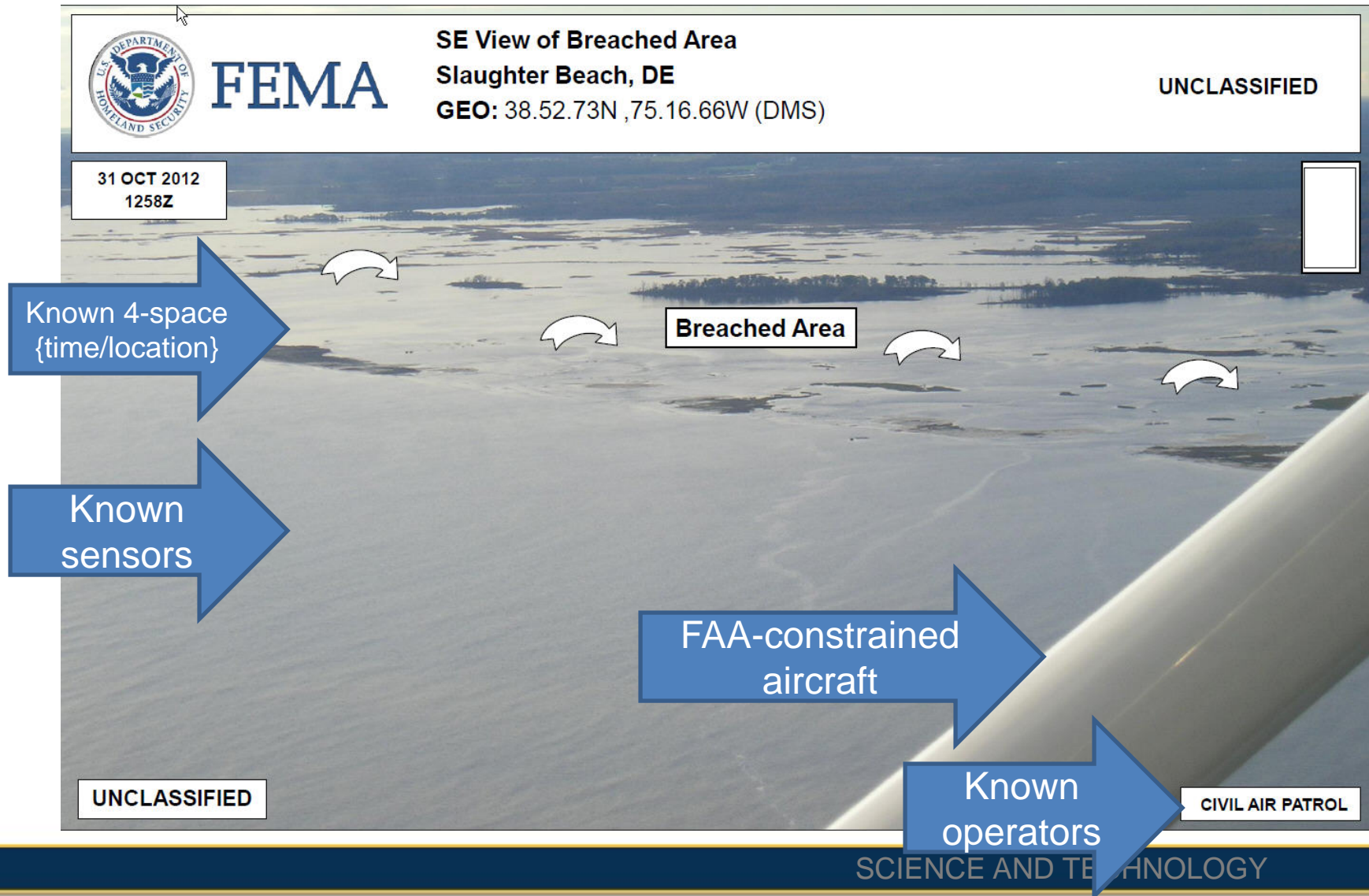
# Closed systems - example







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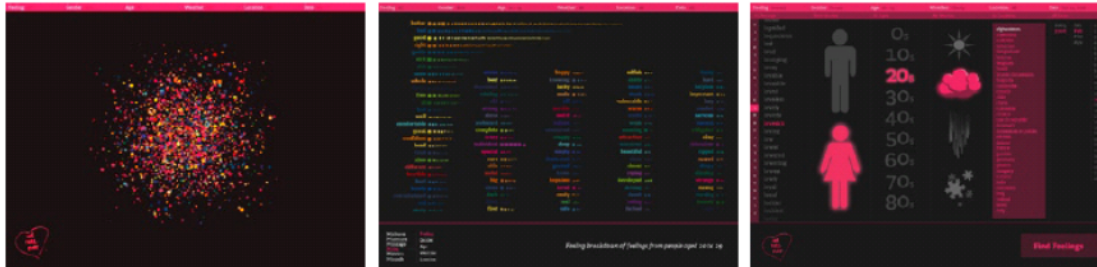


# An Era of Global Technical Means (GTM)

UNCLASSIFIED



Jonathan Harris and Sep Kamvar's We Feel Fine scans the blogosphere for posts containing the phrases "I feel" and "I am feeling" to construct an ever-changing portrait of the landscape of human emotion. Since 2005, over 12 million feelings have been collected, with more than 10,000 new feelings added every day.



Source: We Feel Fine

es in explosion in northwest Pakistan - website

Karachi Geo TV website in English 02 Nov 12

istani television channel Geo News website on 2 November

explosion in the Feroze Ghundi area of Hangu. Police said casualties are feared in this explosion.

he explosion is not yet known.



## City of Laredo

Puente de Las Americas Bridge I  
Juarez-Lincoln Bridge II  
Colombia Bridge III  
World Trade Bridge IV

### Laredo, Texas

International Bridge # 1

International Bridge # 1

International Bridge # 2

International Bridge # 2

Laredo Side

Mexico Side

Laredo Side

Mexico Side





## Challenges 'interfacing' with GTM:

- Laws [compliance of external entities unknown]
- Specifications/standards [vary and dynamic]
- Developers [may be unknown]
- [Other] users [unknown]
- Environment (still may be anticipated)
- Applications [unintended]



## Challenges ‘interfacing’ with GTM:

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**Implication: require knowledge systems  
with adaptable, resilient, and rapidly  
reconfigurable interfaces**





# Challenges 'interfacing' with GTM:

- What can systems engineering offer to
  - Our interfaces with the knowledge of the world?
  - Our internal processes to move and interpret data?
  - Our means for communicating to customers in a timely and relevant manner?



- Thank you